PART B OF THE SUPPORTING STATEMENT

INFORMATION COLLECTION REQUEST
(EPA ICR Number 1885.01)

IAQ Practices in Schools Survey

U.S. Environmental Protection Agency
Office of Radiation and Indoor Air
Indoor Environments Division

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SECTION I – SURVEY OBJECTIVES, KEY VARIABLES, AND OTHER PRELIMINARIES

1(a) Survey Objectives

EPA is proposing to conduct a survey to evaluate the current use of indoor air quality (IAQ) management practices in our nation's schools. EPA has developed low-cost guidance for schools, entitled *IAQ Tools for Schools*, which details the wide range of potential indoor air pollutants and suggests ways in which school administrators can improve the indoor air quality of their schools. Through this survey effort, EPA can evaluate the effectiveness of *IAQ Tools for Schools* and other outreach efforts and select future initiatives that will further the implementation of IAQ-management practices in schools.

By surveying schools, EPA expects to be able to demonstrate the achievement of the Agency's Government Performance Results Act (GPRA) goal. Between now and the year 2005, the Agency is striving to achieve the implementation of sound IAQ-management practices in 15 percent of our nation's schools.

EPA expects the following issues to be addressed by the *IAQ Practices in Schools Survey:*

Issue 1: The extent to which sound IAQ-management practices are being used in the nation's schools

Issue 2: The barriers to implementation, if any, that have been incurred by school administrators in attempting to administer IAQ-management practices

Issue 3: Ways in which the Agency might better target its outreach efforts to encourage widespread adoption by school administrators of sound IAQ practice, such as those outlined in *IAQ Tools for Schools*

1(b) Key Variables

The key variables associated with this survey effort include:

- The level of knowledge possessed by school administrators, or their contractors, about indoor air quality and ways in which to improve it
- Potential sources of indoor air pollution within a particular building

- IAQ-management practices currently being used by school administrators and managers

The most significant variable in terms of its potential influence on the survey results are the types of IAQ-management practices currently being used by school administrators and managers. This variable is directly related to the survey's primary objective, which is to determine the extent to which such practices are utilized in the nation's schools. The other variables identified may influence the likelihood that a school administrator will implement IAQ-management practices and therefore may indirectly influence survey results.

1(c) Statistical Approach

In response to the GPRA, EPA has set a specific, quantitative goal related to the extent to which sound IAQ-management practices are being used in schools throughout the country. The primary objective in conducting the *IAQ Practices in Schools Survey* is to measure the use of these practices in our nation's schools. EPA has targeted school administrators throughout the United States as potential recipients of its survey, since they are most likely to know what IAQ measures are currently employed as part of their school's routine operation and maintenance. However, it is not practical to survey every school administrator in the United States. Consequently, EPA is faced with surveying a subset of the group in such a way as to allow the Agency to draw conclusions about the group as a whole from the responses received. Anecdotal information is not sufficient for this purpose, and so EPA has chosen a statistical approach for the *IAQ Practices in Schools Survey*.

The survey asks a series of questions about the use of IAQ-management practices by school administrators. EPA intends to survey schools twice during the period for which this ICR is in effect–once in the first year and again in the third. An analysis of the first set of survey results will provide EPA with a snapshot of the current use of these practices and establish a baseline. The second set of survey results can then be compared to the baseline and will allow EPA to determine its progress toward meeting its GPRA goals. This comparison will also allow EPA to draw statistically-valid conclusions concerning the change in the use of these practices during the period between survey cycles. If necessary, EPA intends to resurvey in 2005 to again determine whether the Agency has met its GPRA goal.

The survey responses will also provide EPA with an indication of any barriers school administrators may be experiencing in their attempts to implement IAQ-management practices. These data will allow

the Agency to design outreach materials and activities to assist this group in overcoming obstacles and adopting good IAQ practices.

EPA will be assisted in its survey effort by a contractor who will provide support in identifying survey recipients, distributing survey forms and instructions, responding to questions from survey recipients, capturing survey results, tabulating and analyzing data, and reporting results.

1(d) Feasibility

EPA has reviewed the administrative procedures necessary to conduct the *IAQ Practices in Schools Survey* and has concluded that it is feasible to undertake the survey. The survey was peer-reviewed by staff of EPA's IED and EPA Regional offices to ensure that the questions asked will reveal sufficient information to adequately evaluate the IAQ-management practices implemented in schools and to ensure that the questions do not collect redundant information. EPA has also arranged for the data to be handled by an independent company to assure complete confidentiality of the responses. Furthermore, EPA has sufficient funding to conduct the survey and provide the necessary logistical support.

SECTION II – SURVEY DESIGN

2(a) Target Population and Coverage

The sample for each survey cycle will be selected from a registry of public and private schools operating in the United States during the school year immediately preceding the year in which the survey is conducted. (For example, schools surveyed in 2001 will be selected from the registry of schools operating in the 1999-2000 school year.)

2(b) Sample Design

The approximately 111,000 primary and secondary public and private schools operating in the United States during the 1999-2000 school year comprise the sample frame for the first distribution of the *IAQ Practices in Schools Survey*. EPA obtained the sampling frame for the survey from Market Data Retrieval, a commercial source of information regarding schools and school districts located with the United States. A publication entitled, *MDR's School Directory 1999-2000*, provides the following information for every school in the country: school name, address, telephone number, fax number, principal, school nurse, district affiliation, district address, district telephone number, and district fax number. An updated version of this publication will be used to provide the sampling frame for the second survey distribution cycle.

Survey participants may be concerned about the confidentiality of their responses. To ameliorate this concern, EPA has taken steps to ensure that Agency staff will be unable to access raw survey data. These measures are described in more detail in Section 4(b) below.

2(b)ii Sample Size

EPA anticipates distributing a survey to 2,010 schools in two separate survey cycles of 1,005 schools each. In selecting the sample size for each survey cycle, the Agency evaluated a number of parameters including confidence levels, precision, and cost. EPA also considered the likely response rates for a survey of this kind. EPA selected a confidence level of 95 percent and a precision rate of three percent for the survey results. The selection of these parameters, coupled with the expected response rates, led to the selection of the sample size.

EPA did consider higher precision rates. However, to achieve a precision rate of two percent would require EPA to more than double its sample size. The Agency determined that the added cost of substantially increasing the sample size was not warranted given the survey's ultimate objective. The sample size selected will ensure a 95 percent confidence level in the survey's results. This was considered sufficient to demonstrate the achievement of EPA's GPRA goal with a high degree of confidence. Additional precision was considered unnecessary to meet this objective.

2(b)iii Stratification Variables

There are no stratification variables for this survey. The only purpose of the survey is to determine the implementation status of IAQ-management practices in the nation's schools and barriers, if any, to implementing such practices.

2(b)iv Sampling Method

The sample for EPA's *IAQ Practices in Schools Survey* will be randomly generated from the sampling frame identified in Section 2(b)(i). The 1,005 schools selected for each survey distribution cycle will comprise the survey's sample. A total of 2,010 schools will be surveyed during the period for which this ICR is in effect.

2(b)v Multi-Stage Sampling

EPA is not conducting multi-stage sampling in the *IAQ Practices in Schools Survey*.

2(c) Precision Requirements

2(c)i Precision Targets

EPA is targeting an overall precision rate of three percent for determining the extent to which sound IAQ-management practices are utilized in our nation's schools. EPA feels that this precision rate will be more than adequate to characterize the extent to which the Agency's performance goal has been achieved. In addition, this precision rate will allow any change measured between the baseline, as determined by the first survey distribution cycle, and subsequent surveys to be considered a *true* (or statistically relevant) change in the implementation of IAQ-management practices and not a function of the margin of error.

2(c)ii Nonsampling Error

EPA expects that the largest nonsampling error associated with the *IAQ Practices in Schools Survey* will be the result of nonresponse. To minimize the potential for nonresponse, EPA will take the following steps:

- Detailed instructions will accompany the survey and refer recipients to staff who will respond to questions about the survey.

- The survey will be distributed in such a way as to gain the recipient's immediate attention, i.e., FedEx shipping.

- Survey recipients completing the survey in writing may use the self-addressed, postage-paid envelope included in the survey package.

- EPA will contact by telephone those schools that have not responded by mail within 30 days of the survey's receipt. School personnel will be reminded of the survey, encouraged to complete it, and given the option of responding by telephone. If a school chooses to respond by telephone, an appointment will be scheduled and EPA contractor personnel will conduct the survey.

Based on these steps, EPA expects a response rate of 80 percent[1]. However, given the length and nature of EPA's survey, the Agency expects that a small percentage of the responses received will contain information insufficient to measure the respondents' progress towards implementing sound indoor air quality management practices. Consequently, EPA estimates ultimately achieving a 77 percent response rate[2] of responses containing complete data. Based on this expected response rate, EPA has selected a sample size large enough to yield the number of responses necessary to achieve a three percent precision rate and a 95 percent confidence level.

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[1]Of the 1,005 schools surveyed in each distribution cycle, EPA expects that 40 percent, or 402 respondents, will submit their survey response by mail. Of the remaining 603 survey recipients, 67 percent, or 404 respondents, will provide their response through a telephone interview conducted. Consequently, a total of 806 schools, or 80 percent (806 ÷ 1,005), will respond to each distribution of EPA's survey. This will yield a total of 1,612 responses for both survey distribution cycles.

[2]EPA expects that 25 percent of the surveys submitted by mail will contain responses insufficient to evaluate a school's IAQ practices. (Because interviewers will be able to clarify responses provided over the phone as needed, the Agency does not expect to receive incomplete or insufficient responses from those respondents who elect to provide their survey response through a telephone interview.) Therefore, in each distribution cycle, approximately 100 responses provided by mail (402 x .25) will be incomplete. Of those responses, EPA expects to clarify 67 percent, or 67 responses, through telephone follow-up, yielding a total of 369 complete responses received via the mail. 369 complete mail responses + 404 complete telephone responses, within each survey distribution cycle, results in a total of 773 responses sufficient to determine implementation of sound IAQ practices. Consequently, EPA expects to ultimately realize a response rate of 77 percent (773 ÷ 1,005) for the purpose of evaluating a school's IAQ practices. This will yield a total of 1,546 complete responses (and a similar response rate of 77 percent) for both survey distribution cycles.

2(d) Questionnaire Design

A discussion of the data elements contained in the *IAQ Practices in Schools Survey* is included in Section 4(b)(ii) of Part A of the Supporting Statement for this ICR. The survey seeks information about the IAQ-management practices employed by school administrators. All of the questions asked are linked to the survey's objective of determining the extent to which sound IAQ-management practices are utilized in the nation's schools.

EPA designed a four-page survey which elicits predominantly multiple choice responses. The survey seeks information on a number of important practices that schools can use to promote good indoor air quality. By using multiple choice questions, rather than fill-in-the blanks, the Agency has substantially reduced the amount of time necessary for the respondent to complete the survey and has ensured consistency in data response and interpretation.

The survey instrument was peer-reviewed by staff of EPA's IED and EPA Regional offices to ensure that the questions asked will reveal sufficient information to adequately evaluate the IAQ-management practices implemented in schools and to ensure that the questions do not collect redundant information. In addition, the survey instrument was pretested on behalf of nine schools by school principals, facility directors, building engineers, and health officials (see Section 3(c) of Part A of the Supporting Statement for this ICR). These processes ensured that respondents would understand the questions asked and provide the type of data necessary to measure the Agency's objectives. The survey was designed by a statistician to ensure the reliability of the data.

SECTION III – PRETESTS AND PILOT TESTS

To pilot test the *IAQ Practices in Schools Survey*, EPA selected nine schools/school districts. Of these, seven responded to the pretest by completing and returning the survey by mail, and two responded by telephone interview. All nine pretest respondents found the survey to be easy to understand and complete. In addition, the time it took for each respondent to locate the data and complete the survey was not considered to be overly burdensome. Consequently, EPA did not adjust the survey instrument based upon the pretest results.

However, at the time that EPA conducted the pretest, the Agency intended to limit its survey to those schools that had requested and received *IAQ Tools for Schools*. The questions asked were very

specific to this guidance. Recently, the Agency decided to broaden its survey effort to include a random sampling of all primary and secondary public and private schools in the United States. EPA believes that this approach will provide a more definitive indication of the progress being made to implement sound IAQ-management practices in *all* schools in the nation. Thus, the survey instrument has been modified to make it more applicable to a broader sample base, although the intent of the questions remains the same as those contained in the pretest. EPA does not believe that the minor modifications (type of questions and length) made to the survey instrument will affect the amount of time necessary to complete it.

SECTION IV – COLLECTION METHODS AND FOLLOW-UP

4(a) Collection Methods

EPA has chosen two collection methods for the *IAQ in Schools Survey*. Survey participants may respond by returning their completed questionnaire through the U.S. Postal Service using a self-addressed, postage-paid envelope supplied by EPA in the survey package. Participants may also respond via a scheduled telephone interview. These two collection methods were selected to facilitate participant response and were considered to be cost effective.

4(b) Survey Response and Follow-Up

The target response rate for the *IAQ Practices in Schools Survey* is 80 percent. Actual response rate will be measured using the following formula:

Response Rate = Number of Responses ÷ Number of Survey Recipients

Follow-up telephone calls will be made to all survey recipients who have not responded within 30 days of the survey's receipt. These telephone calls will explain the importance of the survey, strongly encourage recipients to participate, and give them the option of responding by telephone. EPA's contractor will be responsible for tracking survey responses, entering survey results into the program database, maintaining the data in a secured environment, and providing quality assurance/quality control of all survey activities. The contractor will ensure the accuracy and completeness of collected information by reviewing each submission prior to data entry. An attempt will be made to contact any respondent who submits an incomplete survey in an effort to complete it correctly.

Each survey form will be assigned a unique identifier to facilitate the tracking of survey responses within

the project database. Survey results will be entered into a Microsoft Access database, and the data will be aggregated to monitor the implementation of good IAQ practices in schools. A double-entry protocol will be observed throughout data entry to ensure an accuracy rate of at least 99 percent. Under this protocol, each survey form will be entered into the database twice, after which a computer program designed to identify variances in the data entered will be run. Following data entry, a final review of survey responses will be performed to identify numerical outliers in individual responses and to ensure file completeness. Blank responses and outliers will be checked against the hard copies of the survey instruments and modified within the database where appropriate. The contractor will randomly check approximately 10 percent of data records generated to ensure compliance with the 99 percent data entry threshold.

SECTION V – ANALYZING AND REPORTING SURVEY RESULTS

5(a) Data Preparation

Before data are entered, each survey will be visually checked to ensure its completeness. Incomplete surveys will be considered nonresponses. However, EPA's contractor will attempt to contact those respondents submitting incomplete surveys in an effort to complete them correctly. Only those survey response forms evaluated as "complete" will be entered into the *IAQ Practices in Schools Survey* database.

5(b) Analysis

The data obtained through this survey will be aggregated and analyzed for the purpose of evaluating the progress EPA has made in meeting the Agency's EPA's GPRA goal. Data will be tabulated for each section of the questionnaire based on the number of responses to each question. For example:

Table 5.1 – Barriers to Implementing IAQ Practices in Schools

Barriers	0	1	2	3	4	5
Potential Liability						
Costs						
Lack of Resources						
Lack of Knowledge						
Competing Priorities						
School Administration						
School Board						

Rating Scale: 0 = none, not at all 2 = somewhat, fair 4 = a lot, good
1 = not much, poor 3 = moderate, adequate 5 = very much, excellent

Each table will include an estimate of the relative error associated with the data reported.

5(c) Reporting Results

The results of the survey will be compiled into a summary document. This document will be made available to all survey participants. Depending on the demand for the survey results, EPA may choose to distribute limited copies through the EPA's Indoor Air Quality Information Hotline (IAQ Info). The Agency may also explore the possibility of making the summary report available through the National Service Center for Environmental Publications (NSCEP). Raw survey data will be maintained by the survey contractor and will remain unavailable to the public or the Agency.